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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
JARRETT, SCOTT L	

ART UNIT	PAPER NUMBER
3623	

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06/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/945,193	SUERMONDT ET AL.	
	Examiner	Art Unit	
	Scott L. Jarrett	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-30,32-34,36-46 and 48-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1 .17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.1 14, and the fee set forth in 37 CFR 1 .17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.1 14. Applicant's submission filed on April 30, 2007 has been entered.

Applicant's amendment canceled claims 1-27, 31, 35 and 47, amended claims 28-30, 32-34,36-46, 48-54 and added new claims 55-61. Currently Claims 28-30, 32-34,36-46, 48-61 are pending.

Response to Amendment

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

It is noted that the applicant did not challenge the officially noticed facts cited in the previous office action(s) therefore those statements as presented are herein after prior art. Specifically it has been established that it was old and well known in the art at the time of the invention:

- to automate a manual method/process;

- to track parts through all stages (statuses, availability, etc.) of the parts (materials, components, items, kits, etc.) life cycle wherein the tracking provides a

plurality of information that enables businesses to do such things as improve the system's ability to estimate (determine, predict, forecast, etc.) stocking/inventory levels;

- to utilize averages to represent/generalize numbers and/or using averages when individual/specific data is unavailable;

- to utilize performance evaluations to identify and implement training for employees (staff, personnel, etc.) wherein the evaluations assist in the selection and/or development of training to address identified areas requiring improvement;

- to identify/flag information that the business/system deems important (relevant, necessary, required, etc.) for users to consider (review, view, etc.); and

- to carry/transport service parts (tools, kits, items, components, supplies, materials, etc.) utilizing a repair vehicle (can, van, truck, etc.) wherein the vehicle(s) provides a convenient method for transporting the technician to/from the repair site.

Response to Arguments

3. Applicant's arguments with respect to claims 28-30, 32-34,36-46, 48-61 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 28-30, 36-40, 42-43, 46 and 48-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Patton & Feldman, Service Parts Handbook (1997).

Regarding Claims 28 and 43 Patton & Feldman teach a method and system comprising (Paragraphs 2-4, Page xix; Past Paragraph, Page 56, 59-62, 70-71, 403; Figures 2-3, 4-1, 4-2, 4-3, 9-2, 9-3, 16-1, 16-2, 16-3, 26-1; Tables 2-2):

- determining costs (holding, carrying, order, transportation, customer service/satisfaction, legal, contractual, insurance, obsolescence, etc.; Pages 146-152; Figures 9-2, 9-3; cost have/not have: Page 42; Paragraph 2, Page 70; Paragraph 3, Page 71; Paragraph 1, Page 72; Paragraph 1, Page 58; Paragraph 2, Page 62; Cost/Benefit: Paragraph 1, Page 74; Pages 410-411; Paragraph 2, Page 70) of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history (Last Paragraph, Page 358; Page 371; Paragraph 2, Page 459), wherein the costs are computer based on probabilities of over/under predicting the parts (Probabilities: Paragraph 1, Page 35; Last Paragraph, Page 47; Last Paragraph, Page 73; Paragraph 1, Page 75; Last Paragraph, Page 95; Last Paragraph, Page 166, Pages

35, 167, 185; Paragraph 1, Page 168; Last Two Paragraphs, Page 187; Last Paragraph, Page 243; Figure 4-1, 4-2; Forecast based on history: Last Two Paragraphs Page 45; Paragraph 2, Page 75; Last Paragraph, Page 159; Last Paragraph, Page 188; Last Paragraph, Page 194; Page 377; Last Paragraph, Page 403; First Pass Fill Rate (FPFR) / Demand Accommodation, Demand Satisfaction, Fill rate, Paragraph 4, Page 27; Pages 402, 456);

- over-predicting, excess , extra, sent and not used, issued and not used, returns, etc.: Paragraph 2, Page 38; Paragraph 2, Page 47; Paragraph 2, Page 259; Last Paragraph, Page 443; Pages 42, 74-76; 458-459
- under-predicting, shortage, stockout (Paragraph 23, Page 27; Table 13-1), needed and not sent, not on hand, demanded not issued, part not filled, part not stocked/carried, nonstocked, request versus quantity, etc.: Paragraph 1, Page 38; Paragraph 1, Page 43; On hand vs. Demand, Page 42; Last Two Paragraphs, Page 48; Figure 2-3;
- correctly-predicting, part filled, on hand, sent and used, issued and used, etc.: Issued/demand, used/sent: Last Paragraph, Page 45; Paragraph 1, Page 46; Page 60; Last Paragraph, Page 71; Figure 4-1; Parts used/usage: Paragraph 2, Page 74; Last Paragraph, Page 78; Paragraph 1, Page 77; Paragraph 1, Page 160; Pages 248, 258-260; Paragraph 1, Page 244; Paragraph 3, Page 364; Paragraph 2, Page 403; parts used/ordered: Figures 9-2, 9-3; 16-3, 28-2;

- selecting a subset of the parts to be sent to the onsite repair in response to the costs (Authorized Stock List, ASL, Pages 58-61; Last Paragraph, Page 159; Pages 252, 254; Last Paragraph, Page 399; Pages 58, 60, 367, 399, 443, 447; Figures 4-1; 16-2, 16-3, 26-1; Table 2-3).

"*Management must keep current on what parts are where*...the New Item Candidate report, *documents what parts are used, but have not been stocked.* If parts are requested, they should be on hand. If an emergency order was required why weren't those parts in stock? There we have the information that says "We should be carrying those parts." On the flip side of that situation are *the parts the company has in stock but did not use* in the last six months. *If they weren't used why are the field technicians carrying them around in car trucks*? **Turnover and use reports** provide information that *enables management to go back and take a good look at both supply and demand.* **The holding of parts and the actual use of those parts has to be tied together.** Identification of *excess parts* means that those valuable assets can specified for consolidation and reduction." , emphasis added, Last Two Paragraphs, Page 38

"If you have that part, I am moderately pleased. After all your job is to have the part I need. If you do not have the part (zero on hand) then am I very unhappy and provability give you considerable pain...When the q*uantity of excess gets large and expensive, then the financial burden begins* to get painful. It is judged that the pain of too many parts will never get as sever as not having the part I need.", Paragraph 1, Page 42

"Logistics business models based on good *historical information* and accurate projection of the future can **accurately forecast the parts and the quantities a technician should carry**. Stocking recommendations for l*ocal inventories and car stocks can be greatly aided by the use of worldwide demand data.* The distinction between demands and issues and usage is important.

Demands are what the technician requests (thinks he needs) to fix the equipment. *Not all demand parts are available to issue. Even if the parts are issued to the technician he may not need all of them*, so some are returned to good stocks. Plan based on demands. The more demand data you have, the more accurate your forecast can be. Assure that your computer system logs all part demands, even though they may not be filled. ***Differences between what parts are provided, and what parts are really needed can guide improvements in diagnostics, training and discipline toward fewer parts and lower costs.***", emphasis added, Last Two Paragraphs, Page 45; Paragraph 1, Page 46

"Make sure that the *expected benefit of carrying a part is greater than the expected cost* of carry that same part...The decision equation is [Cost of Carrying versus Benefit of Carrying]. On the cost side of this equation we have the investment to be made in the part and related support systems which is primarily the cash flow and carrying cost...On the value side of this equation is the ***probability of needing the part*** *and the value that will be received* (or the cost that will be avoided) *by having it on hand.*", Paragraphs 2-3, Page 70

"one interpretation is that up to nine out of every ten parts that were expensively expedited to the field, were not really needed...In most cases it is felt that the *extra parts were ordered because of poor diagnostics failed to proactively determine the one or few parts that were probably needed to fix the failure.*", emphasis added, Last Paragraph, Page 443.

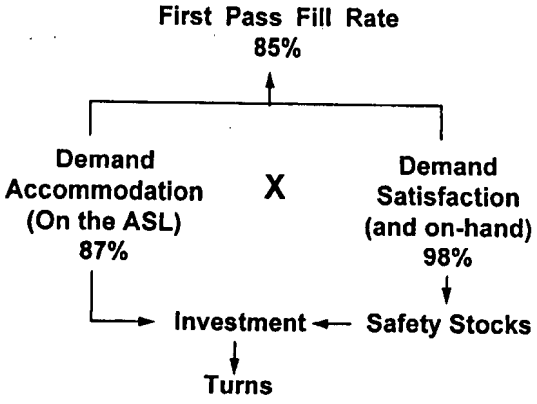


FIGURE 4-1
Components of First Pass Fill Rate follow a logical path

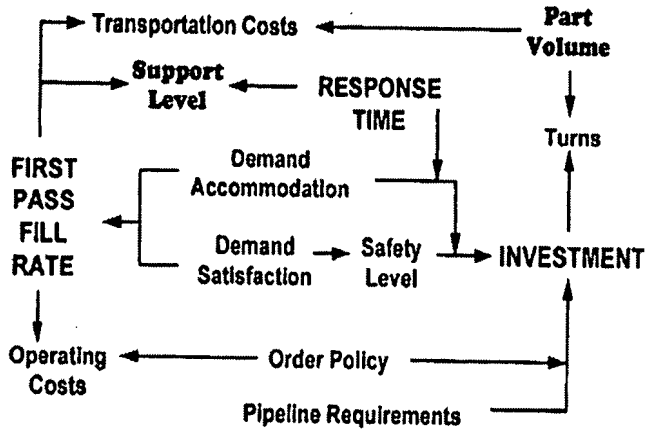


FIGURE 4-2
Logistics metrics have complex relationships

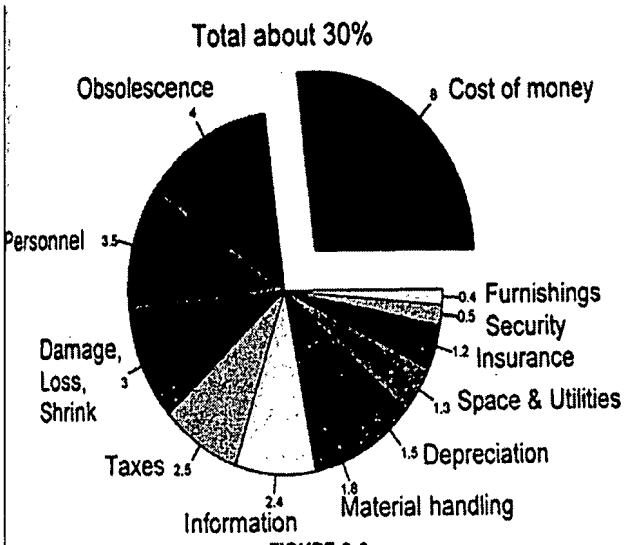


FIGURE 9-2
Components of carrying costs add to at least 30% per year

U P T I M E A N A L Y S I S

Annual Contract Fee	$	4500.00	Phone Clear Time:		0.50
Phone Clear Percentage	%	20.00	Dispatch Time	:	0.25
Mean Time Between Service: (hours)		2200.00	Travel Time	:	1.00
			Diagnostic Time	:	1.00
Equipment Down Percentage%		80.00	Fix Time	:	0.50
Logistics Percentage	%	80.00	Loaded Labor Cost$		87.50
Logistics Cost per Event	$	700.00			
Logistics Level / Fill Rate / Time			Call Back Percentages:		
Level 1	85.00%	0.25 Hrs	First Call Clears	%	85.00
2	10.00	24.00	Second Call Clear	%	10.00
3	5.00	48.00	Third Call Clear	%	5.00

Response Time	:	1.00 Hrs	Uptime	%	99.56
Repair Time	:	1.20			
Logistics Time	:	4.01	Contract Profit	$	2280.22
Call Back Time	:	5.73			
Average Down Time	:	12.04	Profitability	%	50.67

FIGURE 16-1
Logistics has major influence on uptime

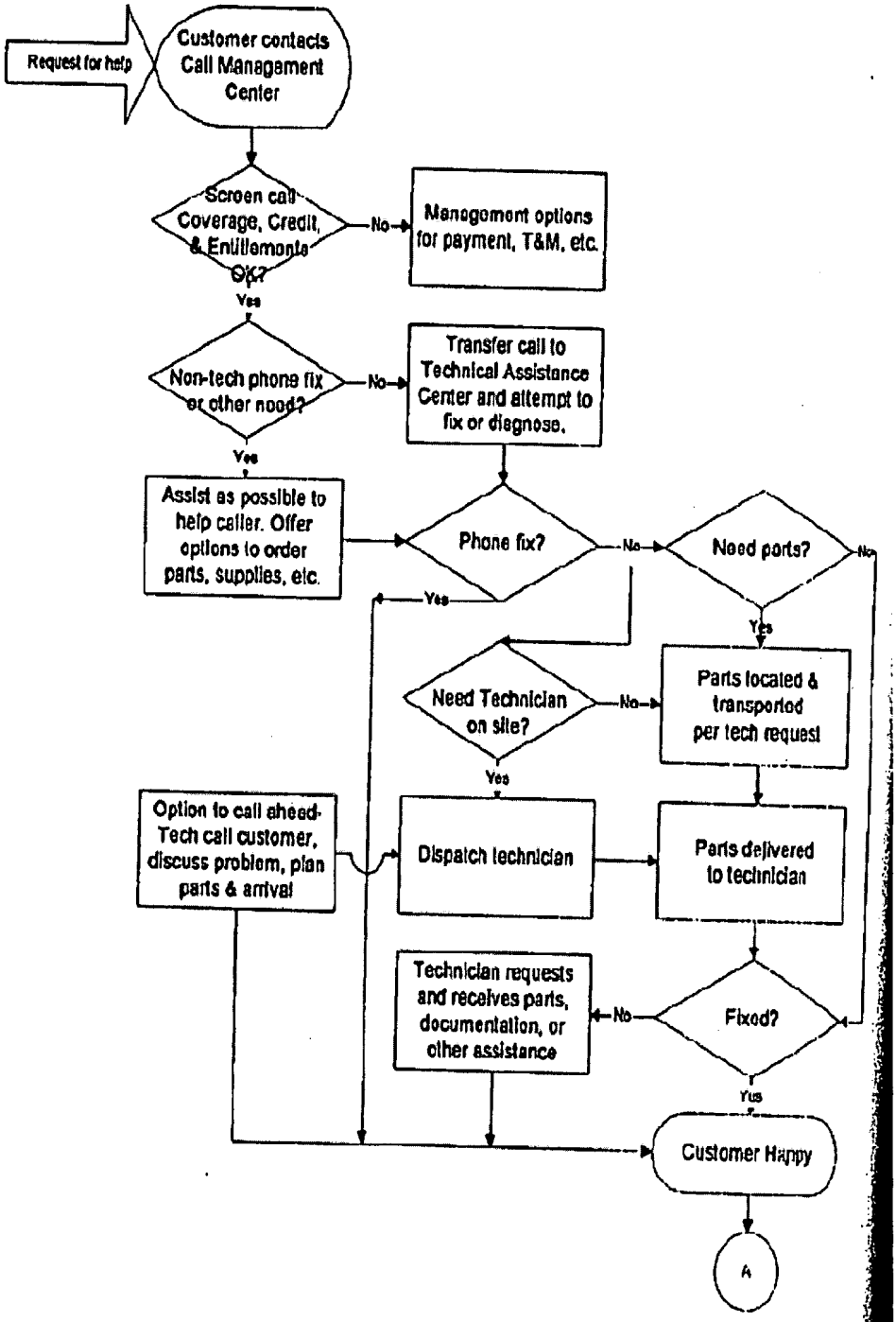


FIGURE 16-2
Parts are integral to customer satisfaction

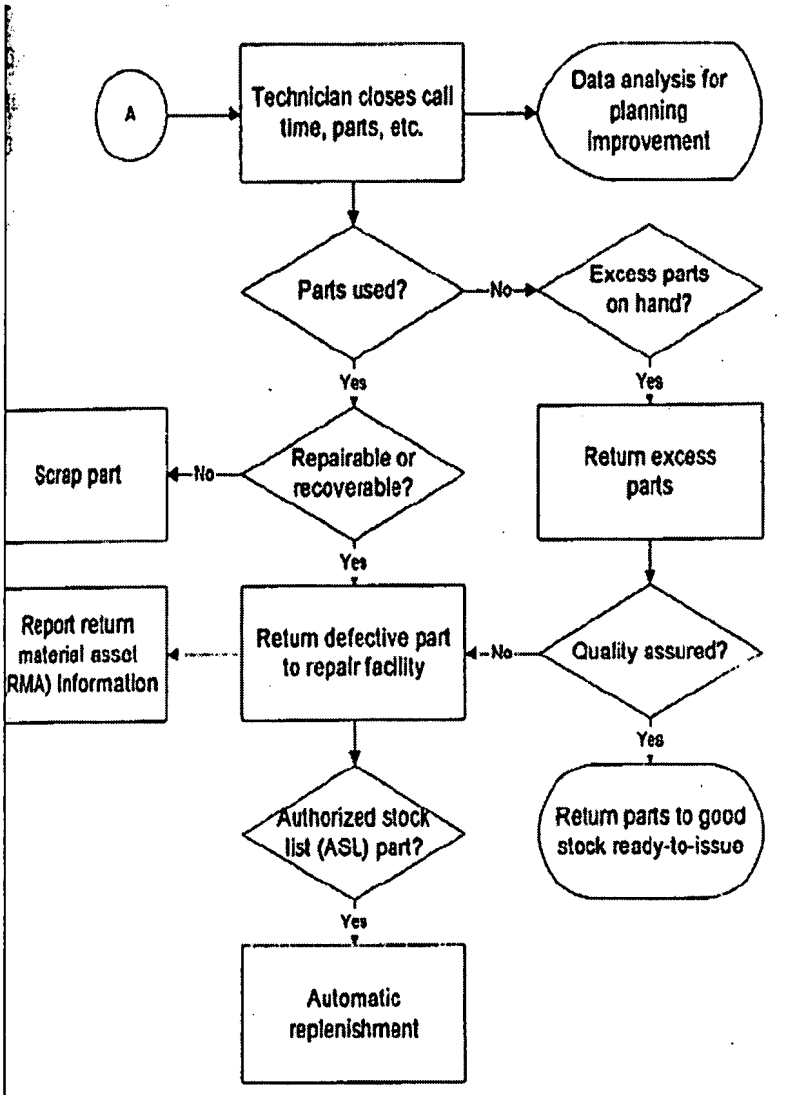


FIGURE 16-3
The call is not complete until returns and reporting are done

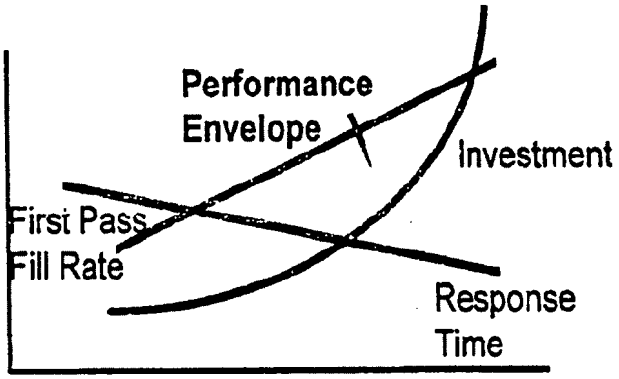


FIGURE 26-1
The logistics performance envelope is bounded by the range of acceptable metrics

Comprehensive system goals

Three major goals stand above the rest as measures of total system performance. They are:

$$\text{Operational Availability (Uptime) } A_o = \frac{\text{MTBM}}{\text{MTBM} + \text{MDT}} \geq 98\%$$

$$\text{First Call Fix Rate} = \frac{\text{Quality Satisfied at First Attempt}}{\text{Total Requests}} \geq 90\%$$

Restore Time = Time from Notification of Failure until Operable ≥ 99% per Contract

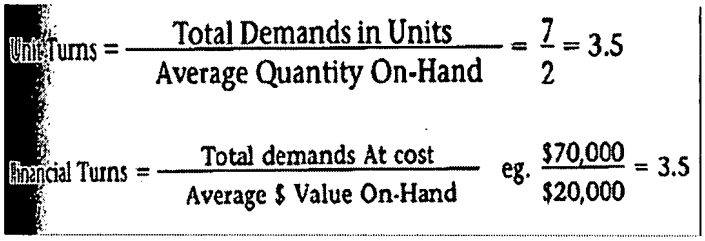
Figure 1: Page 58, emphasis added

$$\text{Demand Accommodation (DA)} = \frac{\text{SKUs on Authorized Stock List}}{\text{SKUs Demanded}} \geq 90\%$$

Figure 2: Page 59

$$\text{Demand Satisfaction (DS)} = \frac{\text{Total Quantity of ASL Parts Issued}}{\text{Total Quantity of ASL Parts Demanded}} \geq 95\%$$

Figure 3: Page 60



$$\text{Unit Turns} = \frac{\text{Total Demands in Units}}{\text{Average Quantity On-Hand}} = \frac{7}{2} = 3.5$$

$$\text{Financial Turns} = \frac{\text{Total demands At cost}}{\text{Average \$ Value On-Hand}} \quad \text{eg.} \quad \frac{\$70{,}000}{\$20{,}000} = 3.5$$

Figure 4: Page 61

Repair measures

$$\text{Parts per Unit Repair} = \frac{\text{Sum of Costs of Parts Used}}{\text{Number of Repairs}}$$

$$\text{Repair Rate} = \frac{\text{Number of Repairs Completed}}{\text{Number of Technician Hours}}$$

$$\text{Repair Cost Ratio} = \frac{\text{Cost to Repair Defective Unit}}{\text{Cost of a New Unit}}$$

$$\text{Backlog Days} = \frac{\text{Demand Total Work Hours}}{\text{Supply Work Hours per Day}}$$

$$\text{Operational Productivity} = \frac{\text{Utilized Time}}{\text{Total (Paid) Time}}$$

$$\text{Achieved Productivity} = \frac{\text{Standard Units Output}}{\text{Total (Paid) Time}}$$

$$\text{Effectiveness} = \frac{\text{Standard Units Output}}{\text{Utilized Time}}$$

Figure 5: Page 66, emphasis added

USE VERSUS DEMAND Should consumption at the end of the supply chain be used as a basis for stocking or should we use the demand data or even the issues data? To quickly understand the difference, consider that technicians typically order more parts than they ultimately use. Not all parts demanded (ordered) are available to issue. Not all issued parts are consumed (used). Since the function of logistics is to support the field technicians, who in turn support the ultimate customer, it is recommended that logistics stock be based on *demand*.

REQUESTS VERSUS QUANTITY A request is an order, which may contain many part numbers and multiple quantities of each. The initial inclination of most people is to use demand quantity, but consider the "Principle of Dissatisfaction" which states that if someone asks once for ten of a nonstocked item they leave disappointed once. If a technician asks ten times for one of a nonstocked item, then he leaves disappointed ten times. For this reason it is recommended that the demand pattern be analyzed. If the average quantity demanded per request is greater than 1.5, then use the request rate as a basis to decide what parts to stock.

FORECAST VERSUS HISTORICAL Historical data is much easier to use in an "untreated" form and can be used as a forecast for low demand items because of the problems of forecasting for small numbers . For other items we should go to the trouble of formal statistical forecasting. This will assure that stocking decisions are forward looking rather than backward looking. New product plans should be folded in, as well as factors that planners know are not reflected in the historical data. Once the data has been manipulated we can apply Pareto analysis, Figure 26-2.

Figure 6: Page 403, emphasis added

Regarding Claims 29-30 Patton & Feldman teach a system and method wherein the cost computation based on the over/under predicting parts comprises computing the costs associated with unnecessarily sending (extra, excess) and not sending (broken call) the parts to the onsite repair (cost have/not have: Page 42; Paragraph 2, Page 70; Paragraph 3, Page 71; Paragraph 1, Page 72; Paragraph 1, Page 58; Paragraph 2, Page 62; Cost/Benefit: Paragraph 1, Page 74; Pages 410-411; Paragraph 2, Page 70; Figure 2-3).

Regarding Claim 36 Patton & Feldman teach a method and system wherein determining the costs includes determining an average cost associated with over/under/mis-predicting the parts (Page 66; Paragraph 3, Page 265; Figure 28-2).

Regarding Claims 37 and 49 Patton & Feldman teach a method and system wherein selecting the subset of parts includes selecting a subset of the parts for transport to the onsite repair (Authorized Stock Lists (ASL) – Pages 58-61; Last Paragraph, Page 159; Pages 252, 254; Last Paragraph, Page 399; Pages 58, 60, 367, 399, 443, 447; Figures 4-1; 16-2, 16-3, 26-1; Table 2-3; Pages 159-160, 443; Vehicle stock: Last Paragraph, Page 43; Paragraph 1, Page 44; Page 239; Last Paragraph, Page 241; Page 245; Page 451; Figure 15-2).

Regarding Claims 38 and 50 Patton & Feldman teach a method and system wherein selecting the subset of parts includes selecting a subset of parts for training call

qualifiers (call qualifiers: Pages 53-54, 254, 387; Last Paragraph, Page 241; Figures 16-1, 16-2; training: Paragraph 4, Page 184; Page 395; Figure 25-2; training based on part usage; Page 248).

Regarding Claims 39 and 51 Patton & Feldman teach a method and system wherein selecting the subset of parts includes selecting a subset of parts for flagging to call qualifiers (call qualifiers: Pages 53-54, 254, 387; Last Paragraph, Page 241; Figures 16-1, 16-2; flag parts: Paragraph 2, Page 47; Paragraph 2, Page 259).

Regarding Claims 40 and 52 Patton & Feldman teach a method and system wherein selecting the subset of parts includes selecting the subset of parts for stocking a repair vehicle (Last Paragraph, Page 43; Paragraph 1, Page 44; Page 239; Last Paragraph, Page 241; Page 245; Page 451; Figure 15-2).

Regarding Claims 42 and 54 Patton & Feldman teach a method and system further comprising determining which personnel to target for additional training in response to the costs (Paragraph 4, Page 184; Page 395; Figure 25-2; training based on part usage; Page 248).

Regarding Claim 46 Patton & Feldman teach a method and system wherein the repair history includes identification of a set of parts sent to a set of prior onsite repairs and a list of the actual parts needed in the prior onsite repairs (issued/demand,

used/sent: Last Paragraph, Page 45; Paragraph 1, Page 46; Last Paragraph, Page 71; Figure 4-1; Page 60; parts used/usage: Paragraph 2, Page 74; Last Paragraph, Page 78; Paragraph 1, Page 77; Paragraph 1, Page 160; Pages 248, 258-260; Paragraph 1, Page 244; Paragraph 3, Page 364; Paragraph 2, Page 403 – parts used/ordered; Figures 9-2, 9-3; 16-3, 28-2; "Information flow of *field failure details* to the repair technician provides major assist to diagnostic operations...The Repair Center Should be online with service call records...The receiving technician can then **look at the service call report** on his monitor **and obtain guidance to failure cause and probable repair action**.", emphasis added, Paragraph 1, Page 64; parts needed Last Paragraph, Page 241; Page 390; Bullet 1, Page 164).

Regarding Claim 48 Patton & Feldman teach a method and system wherein the costs further comprise waste metrics (cost, excess inventory, wasted trips, broken calls, etc.) for a plurality of set of parts and the subset of parts selected comprises less than all of the set of parts for the onsite repair in response to the waste metrics (extra trips/cost/waste: Paragraph 1, Page 37; Last Paragraph, Page 40; Last Two Paragraphs, Page 48; wasted trips; Last Paragraph, Page 40; Paragraph 1, Page 258; Paragraph 1, Page 260; Table 2-2).

Regarding Claim 55 Patton & Feldman teach a method and system wherein determining the costs of mis-predicting parts is for a particular onsite repair of a particular product wherein the selection of the subset of parts is for the particular onsite repair of the particular product (failure rate: Paragraph 1, Page 259; parts for: Page 295; forecast parts Paragraph 2, Page 168; Page 299).

Regarding Claim 56 Patton & Feldman teach a method and system wherein determining the costs of mis-predicting parts comprises determining the costs of mis-predicting corresponding sets of parts (Page 42; Paragraph 1, Page 58; Paragraph 2, Page 62; Paragraph 2, Page 70; Paragraphs 2-3, Page 71; Paragraph 1, Page 72; Paragraph 1, Page 74; Pages 410-411; Figure 2-3).

Regarding Claims 57 and 60 Patton & Feldman teach a method and system wherein selecting the subset of parts comprises selecting less than all of the sets of parts (Last Paragraph, Page 43; Paragraph 1, Page 44; Page 239; Last Paragraph, Page 241; Page 245; Page 451; Figure 15-2).

Regarding Claims 58 and 61 Patton & Feldman teach a method and system wherein determining the costs of mis-predicting parts comprises determining expected wastes from the corresponding parts wherein the waste (cost) is based on the number of times the part was under, over and correctly predicted (First Pass Fill Rate, Demand Accommodation, Demand Satisfaction, Fix Call Rate; Paragraph 1, Page 74; Pages 59-63; 401, 410-411; Paragraph 2, Page 70; Figures 4-1, 4-2, 26-1).

Regarding Claim 59 Patton & Feldman teach a method and system wherein computing the costs based on the probabilities of over/under/mis-predicting parts takes into account a cost of an extra trip to a repair site and a cost of stocking and storing the

unneeded part (extra trips/cost/waste: Paragraph 1, Page 37; Last Paragraph, Page 40; Last Two Paragraphs, Page 48; wasted trips; Last Paragraph, Page 40; Paragraph 1, Page 258; Paragraph 1, Page 260; Table 2-2; broken calls: Paragraph 1, Page 444).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 41 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patton & Feldman, Service Parts Handbook (1997) as applied to claims 28-30, 36-40, 42-43, 46 and 48-61 above, and further in view of Glovitz et al., U.S. Patent No. 5,682,421.

Regarding Claims 41 and 53 Patton & Feldman teach the benefits of supporting a limited number of preferably similar equipment in order to reduce the costs as well as optimized the resources (personnel, training, etc.) associated with the product's support (Last Paragraph, Page 256; Paragraphs 1, Page 257).

While utilizing costs, both actual and forecasted, to determine which products a company wishes to support and/or continue to manufacture is known to those skilled in the art Patton & Feldman does not expressly teach determining which products are least desirable to support in terms of cost as claimed.

Glovitz et al. inherently teach determining which products are no longer desirable to support wherein the system determines the reliability and/or profitability of equipment

(product, item, etc.) utilizing information collected during the repair process, in an analogous art of service/repair management (i.e. unprofitable and/or unreliable products being inherently undesirable to keep/support; Column 1, Lines 50-61).

More generally Glovitz et al. teach a method and system for managing the repair of field equipment wherein service requests are made/received, technicians are assigned/dispatched and repairs are made/completed (Abstract; Column 1, Lines 29-61) comprising:

- identifying a set of symptoms (failure type/mode, nature of the malfunction, etc.) for the purposes of accepting and appropriately assigning service requests based on the symptoms, technician skill level and other factors (nature of the repair/failure; Column 1, Lines 41-60; Column 2, Lines 42-53; Column 10, Lines 36-44; Column 14, Lines 20-25; Table 1, Fields 5 and 27-28);

- analyzing a repair history for the product (item, equipment, etc.) for the purposes of diagnosing (classifying, qualifying, understanding, etc.) the nature of the service/repair request (Column 1, Lines 41-60; Column 2, Lines 42-53; Column 10, Lines 36-44; Column 14, Lines 20-25; Table 1, Fields 5 and 27-28);

- tracking and controlling the inventory of repair parts, specifically the tracking of used repair parts for billing and other purposes; and

- utilizing service/repair information (call records, parts used, etc.) to evaluate the performance of technicians ("Data collected for inventory usage and service of specific copiers may be used to evaluate equipment reliability and profitability. The data may also be *used to evaluate a technician's performance*.", Column 1, Lines 50-61).

It would have been obvious to one skilled in the art at the time of the invention that the method for predicting/optimizing the parts needed for a repair, with its ability to identify parts which are not desirable/optimal to stock/carry, as taught by Patton & Feldman. would have benefited from determining the profitability and/or reliability of the products being repaired in view of the teachings of Glovitz et al.; the resultant system enabling users to minimize costs by eliminating parts/products that are no longer desirable to stock/carry/support (Glovitz et al.: Column 1, Lines 50-61).

8. Claims 32-34, 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patton & Feldman, Service Parts Handbook (1997) and further in view of Patton et al., Service Management Principles and Practice (cited on PTO-892 mailed April 14, 2006).

Regarding Claims 32 and 45 Patton & Feldman teach a system and method comprising:

- determining costs (holding, carrying, order, transportation, customer service/satisfaction, legal, contractual, insurance, obsolescence, etc.; Pages 146-152; Figures 9-2, 9-3; cost have/not have: Page 42; Paragraph 2, Page 70; Paragraph 3, Page 71; Paragraph 1, Page 72; Paragraph 1, Page 58; Paragraph 2, Page 62; Cost/Benefit: Paragraph 1, Page 74; Pages 410-411; Paragraph 2, Page 70) of mis-predicting parts that may be replaced during an onsite repair of a product in response to a repair history (Last Paragraph, Page 358; Page 371; Paragraph 2, Page 459), wherein the costs are computer based on probabilities of over/under predicting the parts (Probabilities: Paragraph 1, Page 35; Last Paragraph, Page 47; Last Paragraph, Page 73; Paragraph 1, Page 75; Last Paragraph, Page 95; Last Paragraph, Page 166, Pages 35, 167, 185; Paragraph 1, Page 168; Last Two Paragraphs, Page 187; Last Paragraph, Page 243; Figure 4-1, 4-2; Forecast based on history: Last Two Paragraphs Page 45; Paragraph 2, Page 75; Last Paragraph, Page 159; Last Paragraph, Page 188; Last Paragraph, Page 194; Page 377; Last Paragraph, Page

403; First Pass Fill Rate (FPFR) / Demand Accommodation, Demand Satisfaction, Fill rate, Paragraph 4, Page 27; Pages 402, 456; Pages 59, 405);

- selecting a subset of the parts to be sent to the onsite repair in response to the costs (Authorized Stock List, ASL, Pages 58-61; Last Paragraph, Page 159; Pages 252, 254; Last Paragraph, Page 399; Pages 58, 60, 367, 399, 443, 447; Figures 4-1; 16-2, 16-3, 26-1; Table 2-3).;

- identifying a set of symptoms associated with the product (analyze repair history: Last Paragraph, Page 358; Page 371; Paragraph 2, Page 459; symptoms – repair history, "Information flow of *field failure details* to the repair technician provides major assist to diagnostic operations...The Repair Center Should be online with service call records...The receiving technician can then **look at the service call report** on his monitor **and obtain guidance to failure cause and probable repair action**.", emphasis added, Paragraph 1, Page 64; parts needed Last Paragraph, Page 241; Page 390; Bullet 1, Page 164);

- wherein determining the costs comprises determining a set of costs of mis-predicting a subgroup of the parts according to parameters *indicating* at least a number of times (service call, calls, travel, First Pass Fill Rate, First Call Fix Rate, etc.; FCFR: Pages 58, 90, 252; FPFR: 10, 367, 399, 466; Demand Accommodation/Satisfaction: Pages 59, 405) that the set of symptoms were reported, the subgroup parts were sent and at least one part in the subgroup of parts was needed to complete the repair and at least one part in the subgroup of parts was unnecessary in the onsite repair.

While Patton & Feldman implicitly track and analyze the number of trips (calls, visits, trips) it takes to complete a repair (First Call Fix rate) Patton & Feldman do not expressly teach determining the number of *trips* as claimed.

Patton et al. teach determining the number of trips (calls, visits, callbacks, etc.; Callback Rate, First Call Fix Rate, Attempts per Incident; H3-H5, Page 48; Callbacks Page 50) as well as a plurality of well known performance metrics including but not limited to callback rates, first call fix rate, attempts per incident (i.e. symptom), parts usage, parts per unit repair, demand accommodation, demand satisfaction and the like (Pages 46, 48, 50, 51; as shown below) in an analogous art of service management for the purpose of managing the performance of the service management process, specifically evaluating a service personnel's repair/service abilities (Callbacks, Page 50).

Human Measures

H1. Response Time = Hours and minutes from request for assistance until expected effort is started.

H2. Restore Time = Time from notification of failure until operable.

H3. First Call Fix Rate = $\frac{\text{Quantity Satisfied at First Attempt}}{\text{Total Requests}}$

H4. Callback Rate = $\frac{\text{Number of Repeat Attempts}}{\text{Total Attempts}}$

H5. Attempts per Incident = $\frac{\text{Total Attempts}}{\text{Number of Incidents}}$

H6. Maintenance House per Operating Hour (MH/OH) = $\frac{\text{Total Support Hours}}{\text{Total Equipment Operating Hours}}$

H7. Administration and Support Ratio = $\frac{\text{Support People Number, Costs}}{\text{Total People Number, Costs}}$

H8. Overtime % = $\frac{\text{Overtime Hours, \$}}{\text{Total Labor Hours, \$}}$

H9. Emergency versus Planned Calls and Time = $\frac{\text{Repair Work Number, Time, Costs}}{\text{Total Work Number, Time, Costs}}$

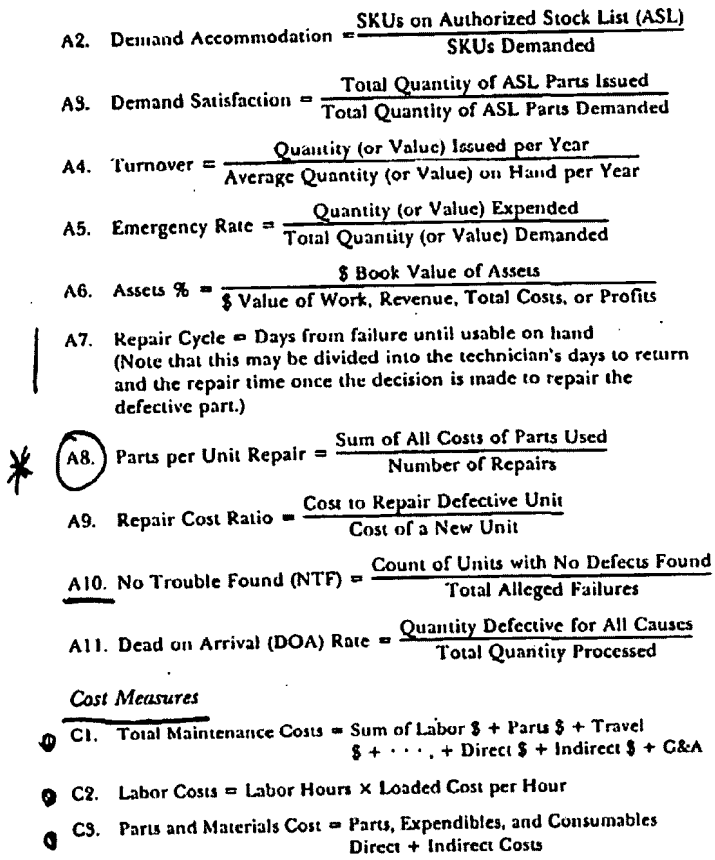
H11. Backlog Days = $\frac{\text{Demand Total Work Hours}}{\text{Supply Work Hours per Day}}$

H12. Operational Productivity = $\frac{\text{Utilized Time}}{\text{Total (Paid) Time}}$

H13. Achieved Productivity = $\frac{\text{Standard Units Output}}{\text{Total (Paid) Time}}$

H14. Effectiveness = $\frac{\text{Standard Units Output}}{\text{Utilized Time}}$

Figure 7: Patton et al., Service Management Principles and Practice, Page 48



A2. Demand Accommodation = $\frac{\text{SKUs on Authorized Stock List (ASL)}}{\text{SKUs Demanded}}$

A3. Demand Satisfaction = $\frac{\text{Total Quantity of ASL Parts Issued}}{\text{Total Quantity of ASL Parts Demanded}}$

A4. Turnover = $\frac{\text{Quantity (or Value) Issued per Year}}{\text{Average Quantity (or Value) on Hand per Year}}$

A5. Emergency Rate = $\frac{\text{Quantity (or Value) Expended}}{\text{Total Quantity (or Value) Demanded}}$

A6. Assets % = $\frac{\text{\$ Book Value of Assets}}{\text{\$ Value of Work, Revenue, Total Costs, or Profits}}$

A7. Repair Cycle = Days from failure until usable on hand (Note that this may be divided into the technician's days to return and the repair time once the decision is made to repair the defective part.)

A8. Parts per Unit Repair = $\frac{\text{Sum of All Costs of Parts Used}}{\text{Number of Repairs}}$

A9. Repair Cost Ratio = $\frac{\text{Cost to Repair Defective Unit}}{\text{Cost of a New Unit}}$

A10. No Trouble Found (NTF) = $\frac{\text{Count of Units with No Defects Found}}{\text{Total Alleged Failures}}$

A11. Dead on Arrival (DOA) Rate = $\frac{\text{Quantity Defective for All Causes}}{\text{Total Quantity Processed}}$

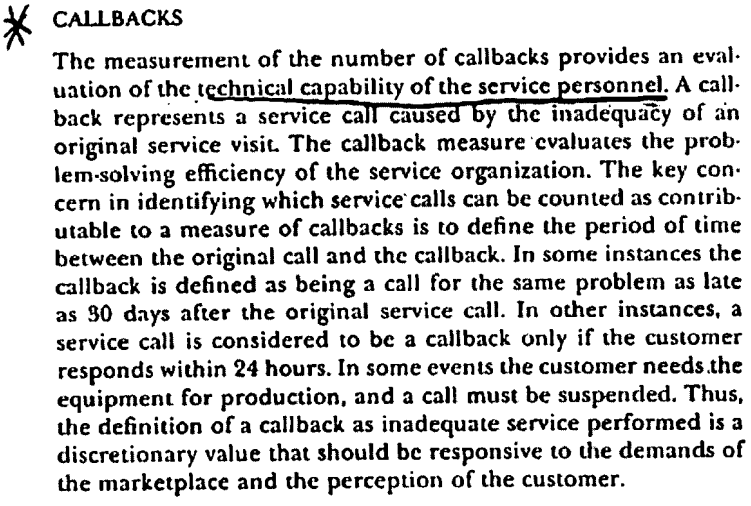
Cost Measures

C1. Total Maintenance Costs = Sum of Labor \$ + Parts \$ + Travel \$ + · · · , + Direct \$ + Indirect \$ + G&A

C2. Labor Costs = Labor Hours × Loaded Cost per Hour

C3. Parts and Materials Cost = Parts, Expendibles, and Consumables Direct + Indirect Costs

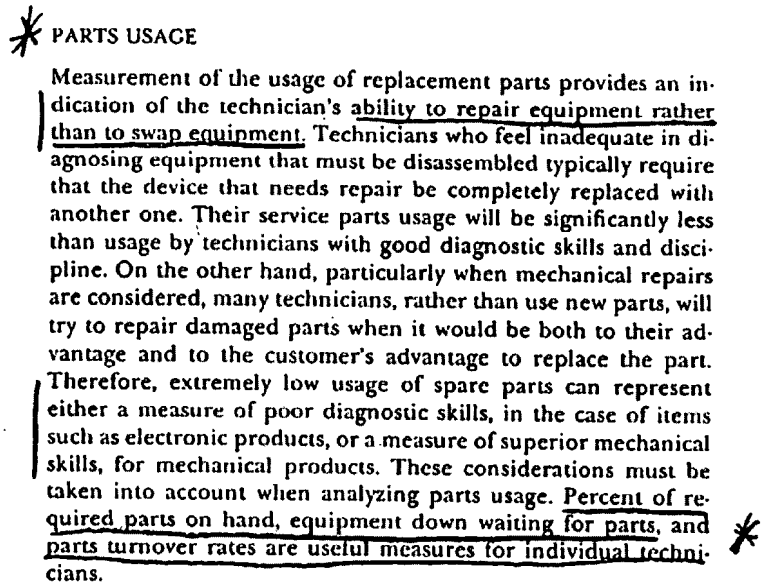
Figure 8: Patton et al., Service Management Principles and Practice, Page 46



CALLBACKS

The measurement of the number of callbacks provides an evaluation of the technical capability of the service personnel. A callback represents a service call caused by the inadequacy of an original service visit. The callback measure evaluates the problem-solving efficiency of the service organization. The key concern in identifying which service calls can be counted as contributable to a measure of callbacks is to define the period of time between the original call and the callback. In some instances the callback is defined as being a call for the same problem as late as 30 days after the original service call. In other instances, a service call is considered to be a callback only if the customer responds within 24 hours. In some events the customer needs the equipment for production, and a call must be suspended. Thus, the definition of a callback as inadequate service performed is a discretionary value that should be responsive to the demands of the marketplace and the perception of the customer.

Figure 9: Patton et al., Service Management Principles and Practice, Page 50



PARTS USAGE

Measurement of the usage of replacement parts provides an indication of the technician's ability to repair equipment rather than to swap equipment. Technicians who feel inadequate in diagnosing equipment that must be disassembled typically require that the device that needs repair be completely replaced with another one. Their service parts usage will be significantly less than usage by technicians with good diagnostic skills and discipline. On the other hand, particularly when mechanical repairs are considered, many technicians, rather than use new parts, will try to repair damaged parts when it would be both to their advantage and to the customer's advantage to replace the part. Therefore, extremely low usage of spare parts can represent either a measure of poor diagnostic skills, in the case of items such as electronic products, or a measure of superior mechanical skills, for mechanical products. These considerations must be taken into account when analyzing parts usage. Percent of required parts on hand, equipment down waiting for parts, and parts turnover rates are useful measures for individual technicians.

Figure 10: Patton et al., Service Management Principles and Practice, Page 51

More generally teach a system and method for service management comprising:

- predicting parts for an onsite repair in response to a plurality of information including but not limited to service/repair history (service forecasting, predictive maintenance, etc.; Figure 5-1; Table 5-1; Pages 72-73; Paragraph 1, Page 139; Last Paragraph, Page 163; "A good support system *proactively determines what parts will* ***probably*** *be required and delivers those parts to meet the technician.*", Paragraph 1, Page 198; Figures 9-1, 9-7; Tables 9-1, 9-2);

- utilizes averages when analyzing time series data ("Moving averages are better for time series analysis than are single point estimates", Paragraph 2, Page 73);

- parts inventory management based on repair history (part usage, failure probabilities, etc.) and other service data (Pages 146-148);

- service call management ("The call management organization acts as the heart of the service operation function. Its purpose is to validate customer status, determine the real customer needs,

assign priorities and pass the call to the person best qualified to help the caller.", Paragraphs 4-5, Page 198);

- configuration management ("the service organization is completely aware of the exact configuration of each piece of equipment required to service. A service technician dispatched to a **specific location to repair a specific piece of equipment can know exactly what is to be repaired and exactly what tools, test equipment and parts to take along.**", Last Paragraph, Page 199).

- capturing, storing, analyzing and reporting on a plurality part service data including but not limited to part usage repair costs, technician performance, product/equipment performance, preventive metrics and the like (parts per unit repair, no trouble found, actual vs. estimated, first call fix rate, callback rate, attempts per incident, call duration, etc.; Performance Measurement and Reporting, Pages 44-48, 50-51; Table 3-2; "Percentage of required parts on hand, equipment down waiting for parts and parts turnover rates are useful measures for individual technicians.", Last Paragraph, Page 51);

- flagging repairs/service information to indicate/alert users to one or more conditions/information (corrective maintenance, alerts, condition monitoring; Last Paragraph, Page 196; Paragraph 1, Page 197; Last Paragraph, Page 142; Figure 9.1);

- identifying training needs and providing individualized training based on observed/measure performance metrics (Pages 44-48; Last Paragraph, Page 117; Paragraph 2, Page 124); and

- automating service part management utilizing computers (information systems, apparatus, etc.; "Most service parts are low usage and are best forecast by humans with computerized historical data and information on expected market demand and technical supply.", Paragraph 1, Page 164; Information Systems, Pages 242-249).

Patton et al. teach identifying a set of symptoms associated with a product (i.e. diagnostics, troubleshooting, predictive maintenance, etc.; Pages 130-33, 136-139; Paragraphs 4-5, Page 198; Last Paragraph, Page 1999; Figures 9-1, 9-7; Tables 7-1, 9-1).

Patton et al. teach providing general and individualized training to a plurality of users (technicians, service center representatives, call qualifiers, etc.) based on a plurality of monitored human performance metrics (accuracy, completeness, response time, productive time, productivity, effectiveness, etc.) and test/examinations (Page 48; Paragraph 2, Page 53; Service Training, Pages 117-125; Table 3-2).

Patton et al. teach flagging repairs/service information to indicate/alert users to one or more service/repair conditions/information/needs (corrective maintenance, alerts, condition monitoring; Last Paragraph, Page 142; Paragraph 1, Page 143; Last Paragraph, Page 196; Paragraph 1, Page 197; Last Paragraph, Page 142; Figure 9.1).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for service management as taught by Patton & Feldman with its ability to track a service technicians first call fix rate would have benefited from tracking the number of trips (calls, visits, attempts, etc.) in view of the teachings of Patton et al.; the resultant system/method enabling businesses to the purpose of evaluate service personnel's problem-solving abilities (Patton et al.: Callbacks, Page 50).

Regarding claims 33-34 and 44 Patton & Feldman teach a method wherein the computation of the costs is based on the probabilities of under/over predicting according to the number of times that the parts were under-predicted, over-predicted and correctly predicted (First Pass Fill Rate (FPFR), Demand Accommodation, Demand Satisfaction, fill rate, Order Vs. Use Ration, issues vs. demand, issued vs. used, parts usage history, etc) wherein the probabilities are based on the number of times the parts were over/under/correctly predicted (Order vs. Use ratio Bullet 1, Page 166; Fill rate, Paragraph 4, Page 27; Pages 402, 456; FCFR: Pages 58, 90, 252; FPFR: 10, 367, 399, 466).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Ballou et al., U.S. Patent No. 4,757,463, teach a service management system and method wherein analysis of service/repair history data is utilized to minimize in correct repairs resulting in multiple visits for the same problem.

- Jayarman et al., U.S. Patent No. 5,287, 267, teach a system and method for predicting and order service parts (spares) for the repair of products in order to meet specified service levels.

- Tsuyama et al., U.S. Patent No. 5,596,712, teach a service management system and method for identifying and analyzing product "troubles."

- Gibson et al., U.S. Patent No. 6,343236, teach a service management system and method wherein product repair history and fault log data are analyzed for the purposes of predicting future repairs/service needs.

- Shah et al., U.S. Patent No. 6,473,659, teach a system and method for integrating and analyzing a plurality of product (equipment) diagnostic and incident information.

- Varma et al., U.S. Patent No. 6,625,589, teach a system and method for analyzing repair history/fault log information to identify symptoms that point to specific faults/repair needed for a specific product.

- Sampath et al., U.S. Patent No. 6,892,317, teach a service management system and method comprising analyzing a plurality of product information related to the

operation of a particular product and determining the action necessary to repair the product.

- Ahrens et al., U.S. Patent Publication No. 2002/0161458, teach a service management system and method comprising recording product specific service/repair history (repair record) that includes the parts replaced, components used, etc. and then utilizing this repair history to do such things as predict which part (FRU) will most probably need to be replaced and determine a service action plan.

- Wimsatt, Applications: A Smart way to improve maintenance management (1998), teaches HP utilization of computerized maintenance management systems and methods for capturing and analyzing product specific repair history information.

- Tinham, Productive maintenance keep on trucking (2000), teaches HP's sale of computerized maintenance management systems/enterprise asset management systems and methods comprising parts purchasing, inventory management, work and personnel scheduling and management.

- Stagnaro, Understanding the alphabet soup of maintenance management (2001), teaches a plurality of well known methods/systems utilized to manage product maintenance (CMMS, EAM) and that theses systems/methods commonly comprising work order (cost and repair history), inventory and purchasing modules/subsystems. Stagnaro further teaches that "a true EAM solution allows the company to optimize inventory levels, and track transfer of assets and materials across the entire organization and eliminate overstock of costly parts. Also the company *can learn which*

machines cost the most to maintain and why and then determine purchase plans."

(emphasis added)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (571) 272-7033. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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June 21, 2007